Complete Summary

GUIDELINE TITLE

Prevention of rotavirus gastroenteritis among infants and children. Recommendations of the Advisory Committee on Immunization Practices (ACIP).

BIBLIOGRAPHIC SOURCE(S)

Cortese MM, Parashar UD, Centers for Disease Control and Prevention (CDC). Prevention of rotavirus gastroenteritis among infants and children: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Recomm Rep 2009 Feb 6;58(RR-2):1-25. [122 references] PubMed

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Parashar UD, Alexander JP, Glass RI, Advisory Committee on Immunization Practices (ACIP), Centers for Disease Control and Prevention. Prevention of rotavirus gastroenteritis among infants and children. Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Recomm Rep 2006 Aug 11;55(RR-12):1-13. [85 references]

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Rotavirus gastroenteritis

GUIDELINE CATEGORY

Prevention

CLINICAL SPECIALTY

Family Practice
Infectious Diseases
Pediatrics
Preventive Medicine

INTENDED USERS

Advanced Practice Nurses
Health Care Providers
Nurses
Physician Assistants
Physicians
Public Health Departments

GUIDELINE OBJECTIVE(S)

To provide recommendations on the use of rotavirus vaccine in infants and children

TARGET POPULATION

Infants from 6 weeks to 8 months, 0 days old

INTERVENTIONS AND PRACTICES CONSIDERED

Immunization with live, oral, human-bovine, pentavalent, reassortant rotavirus vaccine (RotaTeq® [RV5]) or live, oral, human attenuated monovalent rotavirus vaccine (Rotarix® [RV1])

MAJOR OUTCOMES CONSIDERED

- Efficacy of vaccines against rotavirus gastroenteritis
- Adverse effects from the vaccine or applicators
- Transmission of virus from shedding
- Immunogenicity of vaccine
- Cost-effectiveness of rotavirus vaccination

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases
Searches of Unpublished Data

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The Advisory Committee on Immunization Practices (ACIP) rotavirus vaccine workgroup obtained published and unpublished data on the burden and epidemiology of rotavirus disease in the United States, the safety and efficacy of the monovalent (RV1) and pentavalent (RV5) rotavirus vaccine, and cost-effectiveness analyses.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Level of Evidence

I. Evidence from randomized controlled studies
II. Evidence from other epidemiologic studies
III. Opinion of authorities

Strength of Evidence

A. Good evidence to support recommendation
B. Fair evidence to support recommendation
C. Insufficient evidence

METHODS USED TO ANALYZE THE EVIDENCE

Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The Advisory Committee on Immunization Practices (ACIP) rotavirus vaccine workgroup was reestablished in July 2007, after submission of the Biologics License Application (BLA) for the monovalent rotavirus vaccine (RV1) to the US Food and Drug Administration (FDA) in June 2007. The workgroup held teleconferences at least monthly to review published and unpublished data on the burden and epidemiology of rotavirus disease in the United States, the safety and

efficacy of RV1 and the pentavalent rotavirus vaccine (RV5), and cost-effectiveness analyses. Recommendation options were developed and discussed by ACIP's rotavirus vaccine work group. The opinions of workgroup members and other experts were considered when data were lacking. Programmatic aspects related to implementation of the recommendations were taken into account. Presentations were made to ACIP during meetings in October 2007 and February 2008.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

In a 2006 analysis that considered rotavirus disease burden, vaccine efficacy, vaccine coverage rates, and health costs, investigators estimated that a national rotavirus vaccination program in which 3 doses of pentavalent rotavirus vaccine (RV5) were administered at ages 2, 4, and 6 months would result in 255,000 fewer physician visits, 137,000 fewer emergency department (ED) visits, 44,000 fewer hospitalizations, and 13 fewer deaths among children in one U.S. birth cohort followed to age 5 years. From the health-care perspective (i.e., evaluating medical costs only), the vaccination program was estimated to be cost-saving if the total cost per child (including administration costs) was less than $66 (in 2004 dollars) for a complete series and would incur a net cost at $143 per child. From the societal perspective (i.e., evaluating medical and nonmedical costs), vaccination was likely to be cost-saving at a total cost per child of less than $156 and would be a net cost to society if total cost of vaccination was more than $238 per child. At the manufacturer's price of $62.50 (in 2006 dollars) per dose, a rotavirus vaccination program with RV5 would cost an estimated $197,190 per life-year saved and $138 per case averted from the societal perspective. This analysis was repeated in 2008 for the monovalent rotavirus (RV1) administered at ages 2 and 4 months. A national program with either the 3-dose RV5 series or the 2-dose RV1 series will have similar cost-effectiveness estimates. Assuming a total cost of $208 per child for RV1 and $218 per child for RV5 (in 2006 dollars; one extra $10 administration cost for RV5), RV1 was slightly more cost-effective than RV5 (e.g., from a societal perspective, median estimates of $94 compared with $139 per case averted and $128,400 compared with $198,546 per life-year saved, respectively). However, because of uncertainty in cost per dose, administration, and shipping for each product and of the field vaccine effectiveness of a product's full or partial series, these differences in median estimates between the vaccines might not translate into a true difference for a program.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The final proposed recommendations were presented to the Advisory Committee on Immunization Practices (ACIP) at the June 2008 ACIP meeting; after

discussion, minor modifications were made, and the recommendations were approved.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The levels of evidence (I–III) and strength of evidence (A–C) supporting the recommendations are defined at the end of the "Major Recommendations" field.

Changes to Recommendations from the 2006 Advisory Committee on Immunization Practices (ACIP) Statement

- ACIP provides recommendations for use of a second rotavirus vaccine, monovalent rotavirus vaccine (RV1), to be administered in a 2-dose series at ages 2 and 4 months.
- The maximum age for dose 1 of rotavirus vaccine* is 14 weeks and 6 days (previous recommendation: 12 weeks).
- The maximum age for the last dose of rotavirus vaccine is 8 months and 0 days (previous recommendation: 32 weeks).
- The minimum interval between doses of rotavirus vaccine is 4 weeks; no maximum interval is set (previous recommendation: interval of 4−10 weeks between doses).
- Considerations that support rotavirus vaccination of human immunodeficiency virus (HIV)-exposed or infected infants are described below.
- Rotavirus vaccine may be administered at any time before, concurrent with, or after administration of any blood product, including antibody-containing products, following the routinely recommended schedule for rotavirus vaccine (previous recommendation: defer vaccination for 42 days after receipt of an antibody-containing product, if possible).

*In these recommendations, the term "rotavirus vaccine" is used to refer to both RV5 and RV1.

Recommendations for the Use of Rotavirus Vaccine

Routine Administration

ACIP recommends routine vaccination of U.S. infants with rotavirus vaccine (see Table below). Two different rotavirus vaccine products are licensed for use in infants in the United States, pentavalent rotavirus vaccine (RV5) and RV1. The products differ in composition and schedule of administration. Safety and efficacy were demonstrated for both vaccines in prelicensure clinical trials. Efficacy studies demonstrated that rotavirus vaccine was 85%−98% protective against severe rotavirus disease and 74%−87% protective against rotavirus disease of any severity through approximately the first rotavirus season. ACIP does not express a preference for either RV5 or RV1.

Table: Recommendations and Quality of Evidence for Recommendations for Use of Rotavirus Vaccine

	Level of Evidence	Strength of Evidence
Recommendations		
Routine vaccination with RotaTeq® at ages 2, 4, and 6 months or with Rotarix® at ages 2 and 4 months	I	A
Administer to breastfed infants	I	A
Co-administer with DTaP,[&] Hib[#] vaccine, IPV,** hepatitis B vaccine, and pneumococcal conjugate vaccine	I	A
Administer to infants with mild illness, including gastroenteritis	I	B
Contraindications		
Severe allergic reaction to a vaccine component or a previous vaccine dose	III	B
Precautions		
Altered immunocompetence	III	C
Moderate or severe illness, including acute gastroenteritis	III	C
Chronic gastrointestinal disease	III	C
History of intussusception	III	C
Infants with spina bifida or bladder exstrophy	III	C
Special Situations		
Preterm infants (<37 weeks' gestation)	I	B
Infants living in households with immunocompromised persons	III	C
Infants living in households with pregnant women	III	C
Regurgitation of vaccine	III	C
Infants hospitalized after vaccination	III	C
Infants who have received antibody-containing blood products	III	C

[&] Diptheria and tetanus toxoids and acellular pertussis vaccine

[#] *Haemophilus influenzae* type b conjugate

** Inactivated poliovirus vaccine

RV5 is to be administered orally in a 3-dose series, with doses administered at ages 2, 4, and 6 months. RV1 is to be administered orally in a 2-dose series, with doses administered at ages 2 and 4 months (see table below). The minimum age for dose 1 of rotavirus vaccine is 6 weeks; the maximum age for dose 1 is 14 weeks and 6 days. Vaccination should not be initiated for infants aged 15 weeks and 0 days or older because of insufficient data on safety of dose 1 of rotavirus vaccine in older infants. The minimum interval between doses of rotavirus vaccine is 4 weeks; no maximum interval is set. All doses should be administered by age 8 months and 0 days.

For infants to whom dose 1 of rotavirus vaccine is administered inadvertently at age 15 weeks and 0 days or older, the rest of the rotavirus vaccination series should be completed according to the schedule and by age 8 months and 0 days because timing of dose 1 should not affect the safety and efficacy of any subsequent dose(s). Infants who have had rotavirus gastroenteritis before receiving the full series of rotavirus vaccination should still start or complete the schedule according to the age and interval recommendations because the initial rotavirus infection might provide only partial protection against subsequent rotavirus disease.

No restrictions are placed on the infant's feeding before or after receipt of rotavirus vaccine. Breastfed infants should be vaccinated according to the same schedule as nonbreastfed infants. The efficacy of the rotavirus vaccine series is similar among breastfed and nonbreastfed infants. As with all other vaccines, rotavirus vaccine can be administered to infants with minor acute illness (e.g., mild gastroenteritis or mild upper-respiratory tract infection, with or without fever).

Table: Schedule for Administration of Rotavirus Vaccines

	Vaccine	
Characteristic	**RV5***	**RV1****
No. doses in series	3	2
Recommended ages for doses	2, 4, and 6 mos	2 and 4 mos
Minimum age for first dose	6 wks	
Maximum age for first dose	14 wks and 6 days	
Minimum interval between doses	4 wks	
Maximum age for last dose	8 mos and 0 days	

* RotaTeq®

** Rotarix®

Simultaneous Administration

Rotavirus vaccine can be administered together with diphtheria, tetanus, and pertussis vaccine (DTaP), *Haemophilus influenzae* type b conjugate (Hib) vaccine, inactivated poliovirus vaccine (IPV), hepatitis B vaccine, and pneumococcal conjugate vaccine. Available evidence suggests that the rotavirus vaccine does not interfere with the immune response to these vaccines (for each rotavirus vaccine, see the section "Immunogenicity" in the original guideline document). The infant's immune response to influenza vaccine administered at the same time as rotavirus vaccine has not been studied. However, ACIP has recommended previously that an inactivated vaccine (e.g., inactivated influenza vaccine) may be administered either simultaneously or at any time before or after a different inactivated vaccine or live vaccine (e.g., rotavirus vaccine).

Interchangeability of Rotavirus Vaccines

ACIP recommends that the rotavirus vaccine series be completed with the same product whenever possible. However, vaccination should not be deferred because the product used for a previous dose(s) is not available or is unknown. In these situations, the provider should continue or complete the series with the product available. If any dose in the series was RV5 or the vaccine product is unknown for any dose in the series, a total of 3 doses of rotavirus vaccine should be administered. All doses should be administered by age 8 months and 0 days.

No studies address the interchangeability of the two rotavirus vaccine products. However, no theoretic reason exists to expect that the risk for adverse events would be increased if the series included more than one product, compared with the risk for adverse events of a series containing only one product. Further, although it is possible that effectiveness of a series that contained both products could be reduced compared with a complete series with one product, the effectiveness of a series that contains both products is likely to be greater than an incomplete series with one product.

Contraindications

Rotavirus vaccine should not be administered to infants who have a history of a severe allergic reaction (e.g., anaphylaxis) after a previous dose of rotavirus vaccine or to a vaccine component. Latex rubber is contained in the RV1 oral applicator, so infants with a severe (anaphylactic) allergy to latex should not receive RV1. The RV5 dosing tube is latex-free.

Precautions

Altered Immunocompetence

Practitioners should consider the potential risks and benefits of administering rotavirus vaccine to infants with known or suspected altered immunocompetence; consultation with an immunologist or infectious diseases specialist is advised. Children and adults who are immunocompromised because of congenital immunodeficiency, hematopoietic transplantation, or solid organ transplantation sometimes experience severe, prolonged, and even fatal rotavirus gastroenteritis. However, no safety or efficacy data are available for the administration of rotavirus vaccine to infants who are immunocompromised or potentially immunocompromised, including 1) infants with primary and acquired

immunodeficiency states, cellular immune deficiencies; and hypogammaglobulinemic and dysgammaglobulinemic states; 2) infants with blood dyscrasias, leukemia, lymphomas, or other malignant neoplasms affecting the bone marrow or lymphatic system; 3) Infants on immunosuppressive therapy (including high-dose systemic corticosteroids); and 4) infants who are HIV-exposed or infected. However, two considerations support vaccination of HIV-exposed or infected infants: first, the HIV diagnosis might not be established in infants born to HIV-infected mothers before the age of the first rotavirus vaccine dose (only 1.5%–3% of HIV-exposed infants in the United States will be determined to be HIV-infected); and second, vaccine strains of rotavirus are considerably attenuated.

Acute Gastroenteritis

In usual circumstances, rotavirus vaccine should not be administered to infants with acute, moderate or severe gastroenteritis until the condition improves. However, infants with mild acute gastroenteritis can be vaccinated, particularly if the delay in vaccination might be substantial and might make the child ineligible to receive vaccine (e.g., aged $\geq$15 weeks and 0 days before the vaccine series is started). Rotavirus vaccine has not been studied among infants with concurrent acute gastroenteritis. In these infants, the immunogenicity and efficacy of rotavirus vaccine can theoretically be compromised. For example, in some instances, infants who received oral polio vaccine (OPV) during an episode of acute gastroenteritis had diminished poliovirus antibody responses.

Moderate or Severe Acute Illness

As with all other vaccines, the presence of a moderate or severe acute illness with or without fever is a precaution to administration of rotavirus vaccine. Infants with a moderate or severe acute illness should be vaccinated as soon as they have recovered from the acute phase of the illness. This precaution avoids superimposing adverse effects of the vaccine on the underlying illness or mistakenly attributing a manifestation of the underlying illness to the vaccine. Vaccination should not be delayed because of the presence of mild respiratory tract illness or other mild acute illness with or without fever.

Pre-existing Chronic Gastrointestinal Diseases

Infants with pre-existing gastrointestinal conditions (e.g., congenital malabsorption syndromes, Hirschsprung's disease, or short-gut syndrome) who are not undergoing immunosuppressive therapy should benefit from rotavirus vaccine, and ACIP considers the benefits to outweigh the theoretical risks. However, no data are available on the safety and efficacy of rotavirus vaccine for infants with preexisting chronic gastrointestinal conditions.

Previous History of Intussusception

Practitioners should consider the potential risks and benefits of administering rotavirus vaccine to infants with a previous history of intussusception. Available data do not indicate that RV5 or RV1 are associated with intussusception. A previously licensed rotavirus vaccine that is no longer available in the United States, RRV-TV, was associated with an increased risk for intussusception.

Compared with infants who have never had intussusception, infants with a history of intussusception are at higher risk for a repeat episode of intussusception. No data are available on the administration of rotavirus vaccine to infants with a history of intussusception.

Infants with Spina Bifida or Bladder Exstrophy

Latex rubber is contained in the RV1 oral applicator whereas the RV5 dosing tube is latex-free. Therefore, some experts prefer that infants with spina bifida or bladder exstrophy, who are at high risk for acquiring latex allergy, receive RV5 instead of RV1 to minimize latex exposure in these children. However, if RV1 is the only rotavirus vaccine available, it should be administered, because the benefit of vaccination is considered to be greater than the risk for sensitization.

Special Situations

Premature Infants (<37 Weeks' Gestation)

ACIP considers the benefits of rotavirus vaccination of preterm infants (those born at <37 weeks' gestation) to outweigh the risks of adverse events. Data suggest that preterm infants are at increased risk for hospitalization from rotavirus or other viral pathogens associated with gastroenteritis during their first one to two years of life. In clinical trials, rotavirus vaccine appeared to be generally well tolerated in preterm infants, although a relatively small number of preterm infants have been evaluated (for each rotavirus vaccine, see "Adverse Events After Immunization" in the original guideline document).

ACIP supports vaccination of preterm infants according to the same schedule and precautions as full-term infants and under the following conditions: the infant's chronological age meets the age requirements for rotavirus vaccine (e.g., age 6 weeks–14 weeks and 6 days for dose 1), the infant is clinically stable, and the vaccine is administered at the time of discharge from the neonatal intensive care unit [NICU] or nursery, or after discharge from the NICU or nursery. Although the lower level of maternal antibody to rotavirus in very preterm infants theoretically could increase the risk for adverse reactions from rotavirus vaccine, ACIP believes the benefits of vaccinating the infant when age-eligible, clinically stable, and no longer in the hospital outweigh the theoretic risks.

Vaccine strains of rotavirus are shed in stools of vaccinated infants (for each rotavirus vaccine, see Shedding and Transmission of Vaccine Virus), so if an infant were to be vaccinated with rotavirus vaccine while still needing care in the NICU or nursery, at least a theoretic risk exists for vaccine virus being transmitted to infants in the same unit who are acutely ill (moderate or severe acute illness is a precaution for vaccination) and to preterm infants who are not age-eligible for vaccine. ACIP considers that, in usual circumstances, the risk from shedding outweighs the benefit of vaccinating the infant who is age-eligible for vaccine but who will remain in the NICU or nursery after vaccination.

Exposure of Immunocompromised Persons to Vaccinated Infants

Infants living in households with persons who have or are suspected of having an immunodeficiency disorder or impaired immune status can be vaccinated. Vaccine virus (attenuated rotavirus) is shed in the stools of infants after rotavirus vaccination. However, no data are available on the risk for transmission of vaccine virus to household contacts and the risk for any subsequent disease. Vaccine virus is shed more commonly and for longer periods after RV1 than after RV5 (for each rotavirus vaccine, see "Shedding and Transmission of Vaccine Virus" in the original guideline document). ACIP believes that the protection of the immunocompromised household member afforded by vaccinating the infant in the household and preventing wild-type rotavirus disease outweighs the small risk for transmitting vaccine virus to the immunocompromised household member and any subsequent theoretic risk for vaccine virus-associated disease. Vaccine virus is shed during the first weeks after administration of rotavirus vaccine; handwashing after diaper changing is always recommended.

Exposure of Pregnant Women to Vaccinated Infants

Infants living in households with pregnant women should be vaccinated according to the same schedule as infants in households without pregnant women. Because the majority of women of childbearing age have pre-existing immunity to rotavirus, the risk for infection and any subsequent theoretic risk for disease from potential exposure to the attenuated vaccine virus strain is considered to be very low.

Regurgitation of Vaccine

The practitioner should not readminister a dose of rotavirus vaccine to an infant who regurgitates, spits out, or vomits during or after administration of vaccine. No data exist on the benefits or risks associated with readministering a dose. The infant should receive the remaining recommended doses of rotavirus vaccine following the routine schedule (with a 4-week minimum interval between doses).

Hospitalization after Vaccination

If a recently vaccinated child is hospitalized for any reason, no precautions other than standard precautions need be taken to prevent spread of vaccine virus in the hospital setting.

Infants Who Have Recently Received or Will Receive an Antibody-Containing Blood Product

Rotavirus vaccine may be administered at any time before, concurrent with, or after administration of any blood product, including antibody-containing products, following the routinely recommended schedule for rotavirus vaccine among infants who are eligible for vaccination. No data are available on the immune response to rotavirus vaccine in infants who have recently received a blood product. In theory, infants who have recently received an antibody-containing blood product might have a reduced immunologic response to a dose of oral rotavirus vaccine. However, 2 or 3 doses of vaccine are administered in the full rotavirus vaccine series, and no increased risk for adverse events is expected.

Definitions:

Level of Evidence

I. Evidence from randomized controlled studies
II. Evidence from other epidemiologic studies
III. Opinion of authorities

Strength of Evidence

A. Good evidence to support recommendation
B. Fair evidence to support recommendation
C. Insufficient evidence

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is graded and identified for select recommendations (see the "Major Recommendations" field).

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Prevention of rotavirus gastroenteritis and associated morbidity and mortality among infants and children

POTENTIAL HARMS

A discussion of potential harms post-vaccination, including intussusception and other adverse events, can be found in the original guideline document.

CONTRAINDICATIONS

CONTRAINDICATIONS

Refer to the "Major Recommendations" field for a description of contraindications to vaccine administration.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- Use of trade names and commercial sources is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services.
- References to non-Centers for Disease Control (CDC) sites on the Internet are provided as a service to Morbidity and Mortality Weekly Report (MMWR) readers and do not constitute or imply endorsement of these organizations or their programs by CDC or the U.S. Department of Health and Human Services. CDC is not responsible for the content of these sites. URL addresses listed in MMWR were current as of the date of publication.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Staying Healthy

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Cortese MM, Parashar UD, Centers for Disease Control and Prevention (CDC). Prevention of rotavirus gastroenteritis among infants and children: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Recomm Rep 2009 Feb 6;58(RR-2):1-25. [122 references] PubMed

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2006 Aug 11 (revised 2009 Feb 6)

GUIDELINE DEVELOPER(S)

Centers for Disease Control and Prevention - Federal Government Agency [U.S.]

SOURCE(S) OF FUNDING

United States Government

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Advisory Committee on Immunization Practices

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Parashar UD, Alexander JP, Glass RI, Advisory Committee on Immunization Practices (ACIP), Centers for Disease Control and Prevention. Prevention of rotavirus gastroenteritis among infants and children. Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Recomm Rep 2006 Aug 11;55(RR-12):1-13. [85 references]

GUIDELINE AVAILABILITY

Electronic copies: Available from the Centers for Disease Control and Prevention (CDC) Web site.

Print copies: Available from the Centers for Disease Control and Prevention, MMWR, Atlanta, GA 30333. Additional copies can be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-9325; (202) 783-3238.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on August 21, 2006. This summary was updated by ECRI on February 19, 2007 following the FDA advisory on Rotavirus, Live, Oral, Pentavalent vaccine (RotaTeq). This summary was updated by ECRI Institute on July 9, 2007 following the FDA advisory on RotaTeq (Rotavirus, Live, Oral, Pentavalent) vaccine. This summary was updated by ECRI Institute on March 24, 2009.

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